

SOFTWARE ENGINEERING CORE REQUIREMENTS			
COURSE NO	COURSE TITLE	PREREQUISITE	CR
CS 1400♦♦	Fundamentals of Programming	MAT 1000 or 1010. CS 1030 recommended	3.0
CS 1410♦♦	Object-Oriented Programming	CS 1400	3.0
CS 2300♦♦	Discrete Mathematical Structures I	CS 1410, MATH 1050	3.0
CS 2420♦♦	Intro to Algorithms and Data Structures	CS 1410	3.0
CS 2450*	Software Engineering	CS 2300, 2420	3.0
CS 2600*	Computer Networks I	CS 2810	3.0
CS 2810*	Computer Organization and Architecture	CS 1400	3.0
COMP 301R*	Digital Lecture Series	ENGL 2010, UAS	1.0
CS 305G*	Global Social and Ethical Issues in Computing	ENGL 2010, (CS 1030 or 1400), UAS	3.0
CS 3060*	Operating Systems Theory	CS 2420, 2810, UAS [COSC or Computer Engineering Major]	3.0
CS 3240*	Discrete Mathematical Structures II	CS 2810, COSC, UAS	3.0
CS 3250* or 3260* or 3270* or 3370*	Java Software Development C#.NET Software Development Python Software Development C++ Software Development	COSC, UAS COSC, UAS COSC, UAS CS 2810, COSC, UAS	3.0
CS 3320*	Numerical Software Development	CS 2810, MATH 1210, COSC, UAS	3.0
CS 3410*	Human Factors in Software Development	(CS 3250 or 3260 or 3270 or 3370), UAS	3.0
CS 3450*	Principles and Patterns of Software Design	(CS 3250 or 3260 or 3270 or 3370), UAS	3.0
CS 3520*	Database Theory	COSC, UAS	3.0
CS 4230*	Software Testing and Quality Engineering	CS 2450, (CS 3250 or 3260 or 3270 or 3370), ECE 3710, UAS	3.0
CS 4400*	Software Engineering II	CS 2450, 2600, 3520, (CS 3250 or 3260 or 3270 or 3370), UAS. Pre or Coreq: CS 3450	3.0
CS 4450*	Analysis of Programming Languages	CS 3240, (CS 3250 or 3260 or 3270 or 3370), UAS	3.0
CS 4550*	Software Engineering III	CS 4230, 4400, UAS	3.0
ECE 3710*	Applied Probability & Statistics for Engineers & Scientists	MATH 1210, UAS	3.0
MATH 1210♦♦	Calculus I	MATH 1050 & 1060 (Min. grade of C) (within two years)	5.0
Complete a minimum of 12 credits from the following or any CS 3000 or 4000 level course not already required*.			
CS 2550*	Web Programming I (3)	CS 1410	12.0
Specialized Area of Study * Complete a minimum of 12 credits (at least 9 must be upper division) in a discipline other than Computer Science. See department list for details. Note that these credits may not also be used to fulfill general education requirements.			12.0

* Minimum grade of "C-" required in courses marked with asterisk*

UAS University Advanced Standing: Completion of min of 24 credits of 1000 or higher, completion of ENGL 2010 & MATH 1050 or higher, & min 2.0 GPA.

COSC: Matriculation into Advanced Standing required: (CS 1400, 1410, 2300, 2420 Min grade C+) & (MATH 1210, ENGL 1010 Min grade C). Each class may not be repeated more than once.

NOTE: For each of the following, a maximum of three hours may be counted towards graduation without prior written CS Department approval: CS 339R, CS 439R, CS 479R, CS 481R, CS 489R, CS 491R, and CS 496R.

Advisors:

Arlene Arenaz (801) 863-5748 arlenea@uvu.edu Patti Miner (801) 863-8408 minerpa@uvu.edu Fred Orchard (801) 863-6238 fred.orchard@uvu.edu

GENERAL EDUCATION REQUIREMENTS			
COURSE NO	COURSE TITLE	PREREQUISITE	CR
ENGL 1010♦♦	Introduction to Writing	ENGL 1000 with C- or higher (or appropriate test scores within 3 years)	3.0
ENGL 2010	Intermediate Writing	ENGL 1010 with C- or higher (or appropriate test scores within 3 years)	3.0
PHIL 2050	Ethics & Values	ENGL 1010. ENGL 2020 highly recommended	3.0
American Institutions: HIST 1700 American Civilization or HIST 1740 US Economic History or POLS 1000 American Heritage or POLS 1100 American Natl Govt or (HIST 2700 & 2710 US History)			3.0
HLTH 1100 or PES 1097	Personal Health and Wellness Fitness for Life		2.0
COMM 1020*	Public Speaking	COMM 1020 required for Software Engineering also counts as Humanities	3.0
COMM 2110*	Interpersonal Communication	COMM 2110 required for Software Engineering also counts as Social Science	3.0
BIOLOGY (select from list below)			3.0
Physical Science Distribution (select from list below)			3.0
Biology or Physical Science Distribution (select from lists below)			3.0
FINE ARTS (select from list below)			3.0
Total Credits Required for Degree			122.0

* Minimum grade of "C-" required in courses marked with asterisk*.

BIOLOGY (BB)

BIOL 1010/101H General Biology
BIOL 1070 Genetics
BIOL 1200 Prehistoric Life
BIOL 1500 Biological Anthropology
BIOL 1610 College Biology I
BIOL 1620 College Biology II
*BIOL 204R Natural History Excursion
BIOL 2500 Environment Biology
BOT 2050 Field Botany
BOT 2100 Flora of Utah
BOT 2400 Plant Kingdom
BTEC 1010, Fund in Biotech I Career Surv
HLTH 3400 Human Diseases
MICR 2060 Microbiology for Health Prof
NUTR 2020 Nutrition Through Life Cycle
ZOOL 1090 Intro Human Anat/Phys
ZOOL 2320/232H Human Anatomy

PHYSICAL SCIENCES (PP)

ASTR 1040/104H Elementary Astronomy
ASTR 1050 Investigations of Solar Systems
ASTR 1060 Investigation Stars/Galaxies
ASTR 1070/107H Cultural Astro in Our Lives
ASTR 1080 Life in the Universe

CHEM 1010 Introduction to Chemistry
CHEM 1110 Elem Chem for Health Sc.
CHEM 1120 Elem Organic BioChemistry
CHEM 1210 Principles of Chemistry I
CHEM 1220 Principles of Chemistry II
ENVT 1110 Intro to Environmental Mgmt
GEO 1010/101H Intro to Geology
GEO 1020 Prehistoric Life
GEO 1080 Intro to Oceanography
GEO 1220 Historical Geology
GEO 204R Natural History Excursion*
GEOG 1000 Intro to Physical Geography
METO 1010 Intro to Meteorology
METO 1060 Climate of the Earth
PHSC 1000 Survey of Physical Science
PHYS 1010 Elementary Physics
PHYS1700 Descriptive Acoustics
PHYS 1750 Music Acoustics
PHYS 1800 Energy You and the Environment
PHYS 2010 College Physics I
PHYS 2020 College Physics II
PHYS 2210 Phys Scien/Engr I
PHYS 2220 Phys Scien/ Engr II
TECH 1010 Understanding Technology*
May be used as the third science only*

FINE ARTS (FF)

ART 1010 Introduction to Visual Art
ART 1020 Basic Drawing for Non-Majors
ART 1050 Photography I
ART 1110 Drawing I
ART 1340 Sculpture I
ART 1350 Ceramics I
ART 1650 Watermedia I
ART 3400 Fund of Art Education
ARTH 2710 Hist of Art to the Renaissance
ARTH271H Hist of Art to the Renaissance
ARTH 2720 Hist of Art from Renaissance
ARTH 272H Hist of Art from Renaissance
DANC 1010 Dance as an Art Form
DANC 2110 Orientation to Dance
EGDT 1720 Architectural Rendering
MUSC 1010/101H Intro to Music
MUSC 1030 American Popular Music
MUSC 1100 Fundamental of Music
THEA 1013 Intro to Theater
THEA 1023 Intro to Film
THEA 1033 Acting I
THEA 2311 Film History I
THEA 2200 Theatre and Drama Elem School
Complete 2 of the following to equal 1 Fine Arts
Distribution course:.*
*DANC 3400 Dance in Elem School
*MUSC 3400 Music in Elementary School

♦♦ Matriculation into Advanced Standing (COSC) Requirements Students must be Formally

Matriculated to this program before they can graduate. Please see your advisor for more information

Completion of the following:

- CS 1400 Minimum grade C+
- CS 1410 Minimum grade C+
- CS 2300 Minimum grade C+
- CS 2420 Minimum grade C+
- MATH 1210 Minimum grade C
- ENGL 1010 Minimum grade C

Overall UVU GPA must be minimum 2.5. Each class may not be repeated more than once.

GRADUATION REQUIREMENTS:

1. Completion of a minimum of 120 semester credits, with a minimum of 40 upper-division credits.
2. Overall grade point average of 2.0 or above. Approved matriculation. Combined GPA of 2.5 or higher in all remaining discipline core and emphasis requirements and the General Education requirements marked with an asterisk.
3. Residency hours - - minimum of 30 credit hours through course attendance at UVU. 10 of these hours must be within the last 45 hours earned. At least 12 of the credit hours earned in residence must be in approved CS Department courses.
4. All transfer credit must be approved in writing by UVU.
5. No more than 80 semester hours and no more than 20 hours in CS type courses of transfer credit from a two-year college.
6. No more than 30 semester hours may be earned through independent study and/or extension classes.
7. Successful completion of at least one Global/Intercultural course. CS 305G satisfies this requirement.

Specialized Area of Study for the Software Engineering Bachelor of Science Degree

Required: Minimum of 12 credits (**within the same Area**). Minimum of 9 credits must be Upper Division (3000 or higher.)

Catalog - 2016-2017

	<u>Cr.</u>	<u>Prerequisites</u>
• Accounting (12 credits. Minimum of 9 credits must be Upper Division)		
ACC 2010 Financial Accounting	3	ENGL 1010, MAT 1000
ACC 2020 Managerial Accounting	3	ACC 2010
ACC 3010 Intermediate Accounting I	3	ACC 2010 (min B-), ACC 2020(min C), IM 2600, MATH 1050, UAS
ACC 3020 Intermediate Accounting II	3	ACC 3010, MKTG 2200, UAS
ACC 3300 Cost Management	3	ACC 2020, (MGMT 2340 or MATH 2040), IM 2600, UAS
• Biology (12 credits. Minimum of 9 credits must be Upper Division)		
BIOL 1610 College Biology I	4	ENGL 1010 (min C-) or ACT score 21+, Corequisite BIOL 1615
BIOL 1615 College Biology I Laboratory	1	Corequisite BIOL 1610
BIOL 1620 College Biology II	3	BIOL 1610 (min C-), Corequisite BIOL 1625
BIOL 1625 College Biology II Laboratory	1	Corequisite BIOL 1620
BIOL 3300 Developmental Biology	3	BIOL 1610 (min C-), UAS
BIOL 3400 Cell Biology	3	BIOL 1610 (min C-), CHEM 1220 (min C-), UAS
BIOL 3405 Cell Biology Laboratory	1	BIOL 1610 (min C-), CHEM 1220 (min C-), UAS Corequisite BIOL 3400
BIOL 3500 Conservation Biology	3	BIOL 1610, UAS Corequisite BIOL 3505
BIOL 3505 Conservation Biology	3	BIOL 1610, UAS Corequisite BIOL 3500
BIOL 3800 Conservation Biology	3	BIOL 1010 or 1620 (min C-), UAS. (BIOL 3700 recommended)
BIOL 4300 Bioinformatics & Genome Analysis	4	BIOL 3500 (min C-), UAS
• Business Management (12 credits. Minimum of 9 credits must be Upper Division)		
ACC 3000 Financial Managerial & Cost Accounting Concepts	4	ENGL 2010 or 2020, & MAT 1010 or higher, UAS
ECON 2020 Macroeconomics	3	MATH 1050
ENTR 3170 Entrepreneurship	3	ENGL 1010, UAS
ENTR 3180 Small Business Development	3	ENGL 1010, UAS
ENTR 3190 Early-Stage Financing	3	UAS
MGMT 3000 Organizational Behavior	3	MKTG 2200, UAS
MGMT 330G Survey of International Business	3	(ENGL 2010 or 2020 or MKTG 2200), ECON 2010, UAS
MGMT 3430 Human Resource Management	3	ENGL 2010 or 2020, UAS
MKTG 2200 Written Business Communications	3	
MKTG 3600 Principles of Marketing	3	ENGL 2010 or 2020, UAS
• Chemistry (12 credits. Minimum of 9 credits must be Upper Division)		
CHEM 1210 Principles of Chemistry I	4	MATH 1050, Prior Chem experience rec. Corequisite CHEM 1215
CHEM 1215 Principles of Chemistry I Laboratory	1	Corequisite CHEM 1210
CHEM 1220 Principles of Chemistry II	4	CHEM 1210 (min C-), Corequisite CHEM 1225
CHEM 1225 Principles of Chemistry II Laboratory	1	CHEM 1215, Corequisite CHEM 1220
CHEM 3000 Analytical Chemistry	4	CHEM 1220, 1225, UAS. Corequisite CHEM 3005
CHEM 3020 Environmental Chemistry	3	CHEM 1225, UAS
CHEM 3060 Physical Chemistry I	4	PHYS 2220, MATH 2210, UAS
CHEM 3070 Physical Chemistry II	4	CHEM 3060, UAS
CHEM 3100 Advanced Inorganic Chemistry	4	Pre or Coreq: CHEM 3000, UAS
CHEM 3115 Physical & Inorganic Chemistry Laboratory	1	CHEM 3000 & 3060, Corequisite: CHEM 3100 & 3070, UAS
CHEM 3800 Energy Use on Earth	3	MATH 1050, (PHYS1010 or PHSC1000 or CHEM1010 or GEO1010 or 2040 or METO1010), UAS
CHEM 4000 Instrumental Analysis	2	CHEM 3000, 3070, UAS. Corequisite CHEM 3115
CHEM 4005 Instrumental Analysis Laboratory	2	CHEM 3000 & 2325, UAS. Corequisite: CHEM 4000
CHEM 4030 Radiochemistry	3	CHEM 1215, MATH 1220, UAS
• Electrical Engineering (12 credits. Minimum of 9 credits must be Upper Division)		
ECE 1020 Computer Engineering Problem Solving with Matlab	1	MATH 1050 or higher
ECE 2250 Circuit Theory	3	ECE 1020, MATH 1210, PHYS 2210. Corequisite: ECE 2255
ECE 2255 Circuit Theory Lab	1	ECE 1020, MATH 1210, PHYS 2210. Corequisite: ECE 2250
ECE 2700 Digital Design I	3	MATH 1050 & (CS 2810 or PHYS 2220 or ECE 2250). Corequisite: ECE 2705
ECE 2705 Digital Design I Lab	1	MATH 1050. Corequisite: ECE 2700
ECE 3730 Embedded Systems I	3	ECE 2700, UAS
ECE 3740 Digital Design II	3	ECE 2700, UAS
ECE 3750 Engineering Analysis	3	ECE 1020, MATH 1220, UAS
ECE 3760 Electronic Systems	3	ECE 2250, PHYS 2220. Coreq: ECE 3765, UAS
ECE 3765 Electronic Systems Lab	1	ECE 2255, PHYS 2220. Coreq: ECE 3760, UAS
ECE 3770 Signals and Systems	3	ECE 3750, UAS
ECE 4730 Embedded Systems II	3	ECE 3730, UAS
ECE 4750 Digital Signal Processing	3	ECE 3710, 3770, UAS
ECE 4760 VLSI Design	3	ECE 3760, UAS. corequisite: ECE 4765
ECE 4765 VLSI Design Lab	1	ECE 3765, UAS. corequisite: ECE 4760
ECE 4770 Artificial Neural Networks	3	MATH 1210, UAS
ECE 4780 Wireless & Mobile Communications	3	ECE 2250, MATH 1210, UAS
• Physical Sciences (12 credits. Minimum of 9 credits must be Upper Division):		
PHYS 2210 Physics for Scientists & Engineers I	4	MATH 1210, Corequisite: PHYS 2215
PHYS 2215 Physics for Scientists & Engineers I Lab	1	Corequisite: PHYS 2210
PHYS 2220 Physics for Scientists & Engineers II	4	PHYS 2210 MATH 1220, corequisite: PHYS 2225
PHYS 2225 Physics for Scientists & Engineers II Lab	1	Corequisite: PHYS 2220
PHYS 3110 Modern Physics I	3	PHYS 2220, UAS. Coreq: PHYS 3115
PHYS 3115 Introduction to Experimental Physics I	2	PHYS 2220, UAS. Coreq: PHYS 3110
PHYS 3230 Principles of Electronics for the Physical Sciences	3	PHYS 2220, MATH 2210, UAS
PHYS 3300 Mathematical Physics	3	MATH 2210, UAS. Corequisite: MATH 2280
PHYS 3400 Classical Mechanics	3	PHYS 2220, UAS. Corequisite: PHYS 3300 recommended
PHYS 3500 Thermodynamics	3	PHYS 2220, MATH 2210, UAS
PHYS 3800 Energy Use on Earth	3	MATH 1050, (PHYS 1010 or 1000 or CHEM 1010 or GEO 1010 or 2040 or METO 1010), UAS
PHYS 4100 Biophysics	3	(BIOL 1610, PHYS 3110 & 3115, or instructor approval), UAS
PHYS 4210 Advanced Experimental Techniques	3	(PHYS 3125, PHYS 3230 or instructor approval), UAS
PHYS 4300 Computational Physics	3	PHYS 3300, UAS
PHYS 4410 Electrostatics & Magnetism	3	PHYS 3110 & 3115, PHYS 3300, UAS
PHYS 4420 Electrodynamics	3	PHYS 4410, UAS
PHYS 4510 Quantum Mechanics I	3	PHYS 3110 & 3115, PHYS 3300, UAS
PHYS 4520 Quantum Mechanics II	3	PHYS 4510, UAS
PHYS 4600 Optics	3	PHYS 3300, 4410, UAS
PHYS 4700 Acoustics	3	PHYS 3110 & 3115, PHYS 3300, UAS
PHYS 4800 Solid State Physics	3	PHYS 3120, PHYS 3125, 4510, UAS

